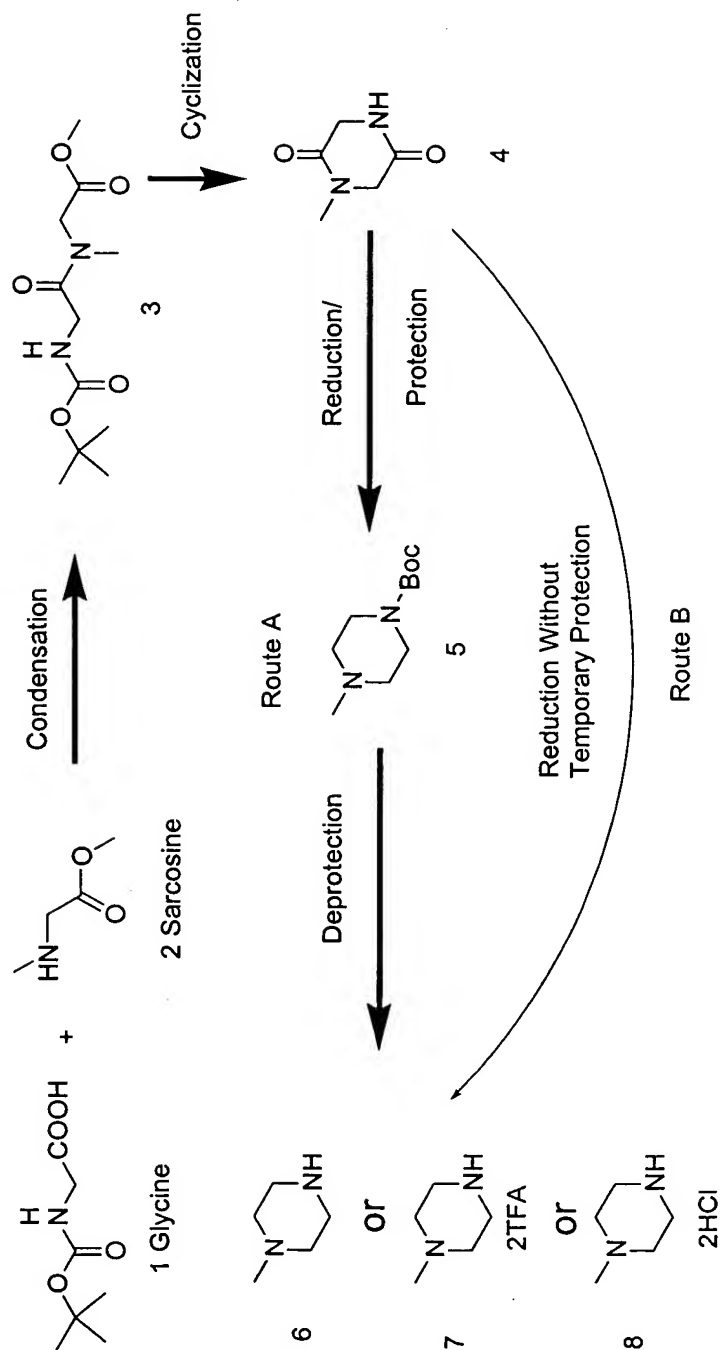
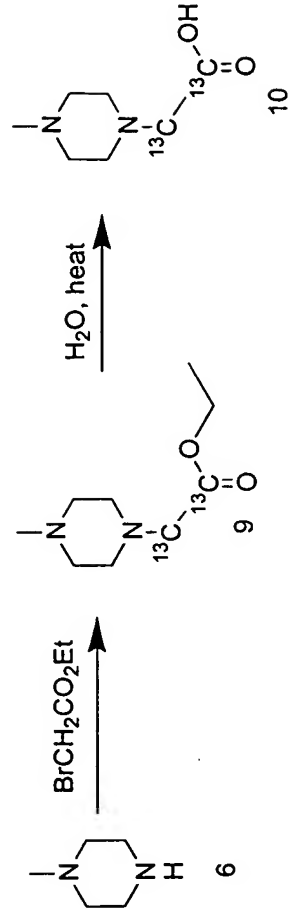


**Figure 1**  
Scheme For The Synthesis Of N-Methyl Piperazine



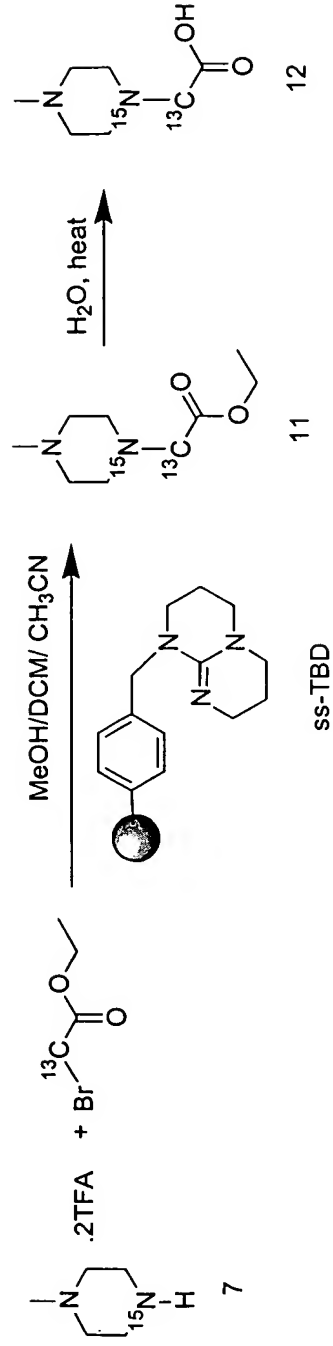
**Figure 2A**

Scheme A For The Synthesis Of N-Methyl Piperazine Acetic Acids



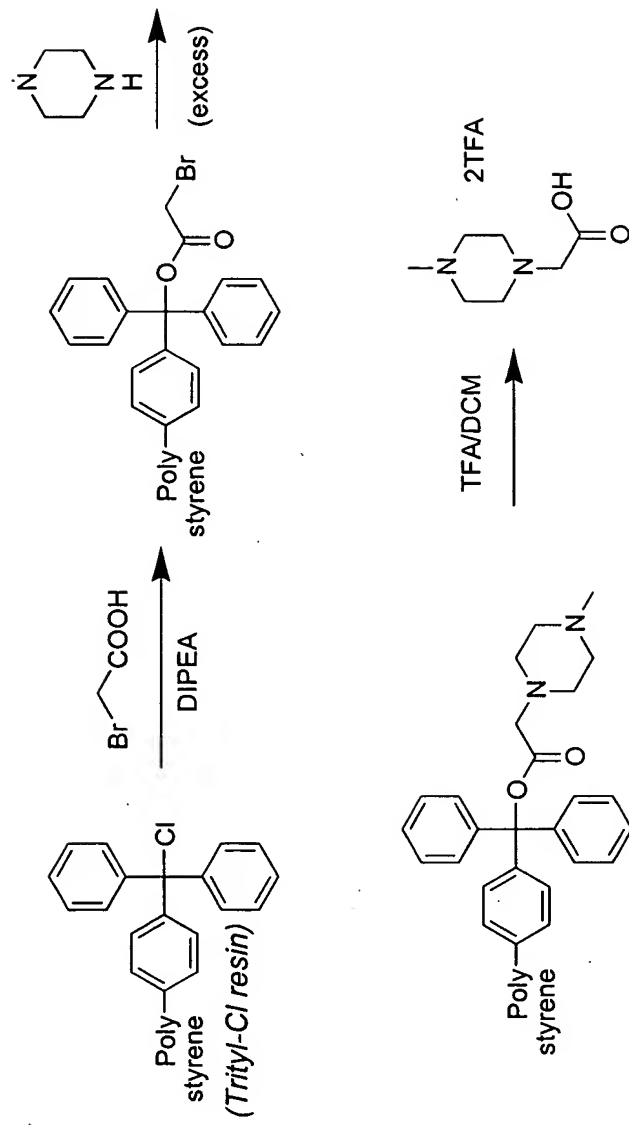
**Figure 2B**

Scheme B For The Synthesis Of N-Methyl Piperazine Acetic Acids



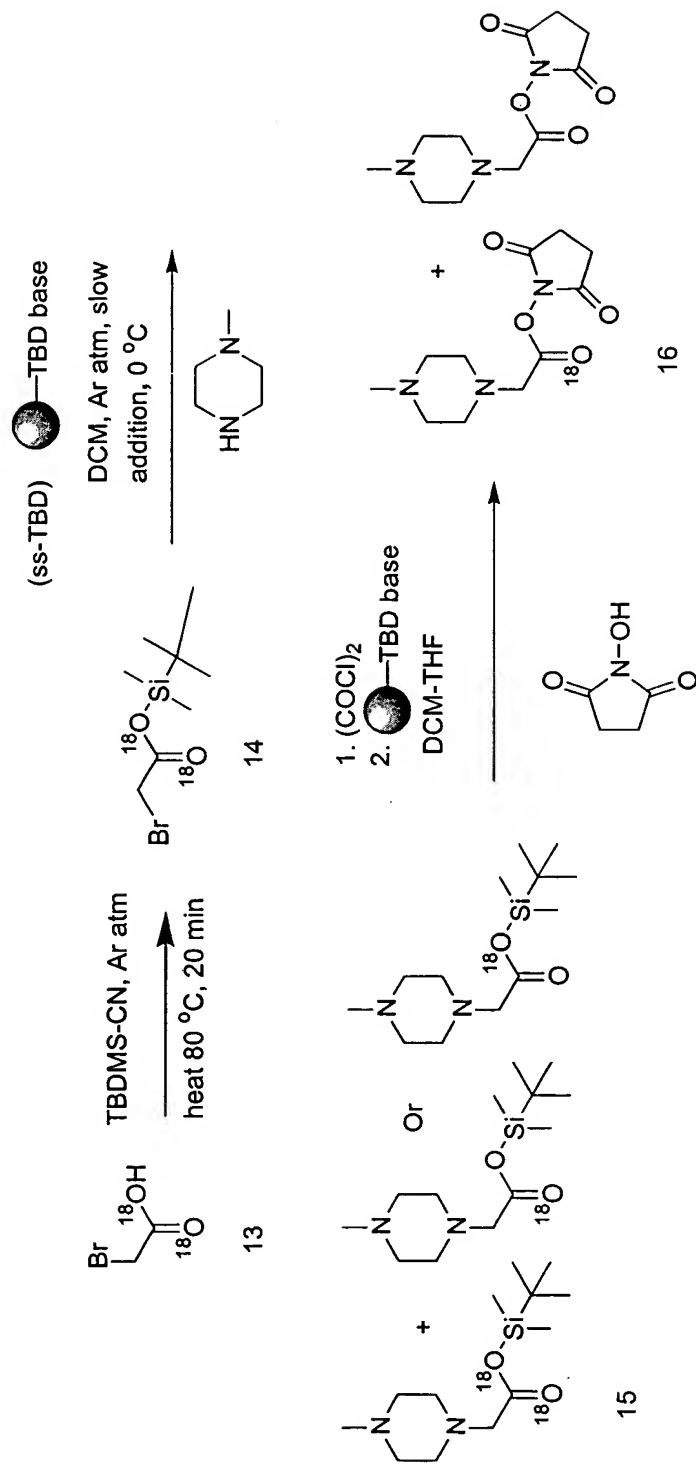
**Figure 2C**

Scheme C For The Synthesis Of N-Methyl Piperazine Acetic Acids



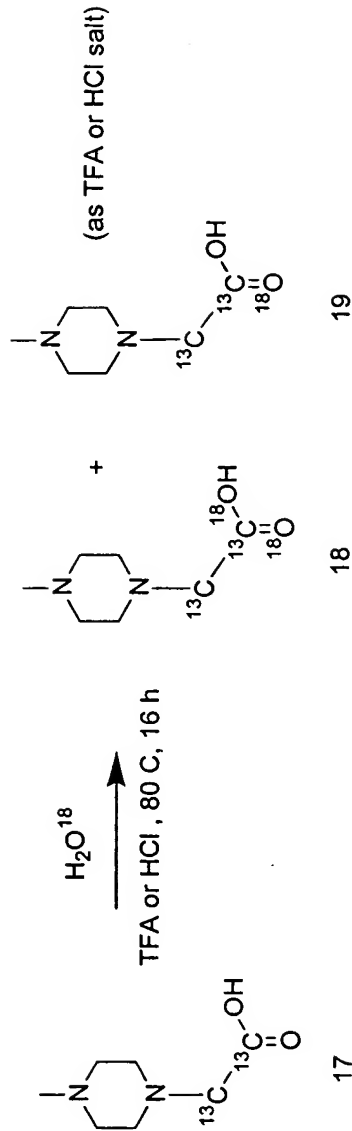
**Figure 3A**

Scheme A For The Synthesis Of  $^{18}\text{O}$  Labeled N-Methyl Piperazine Acetic Acids



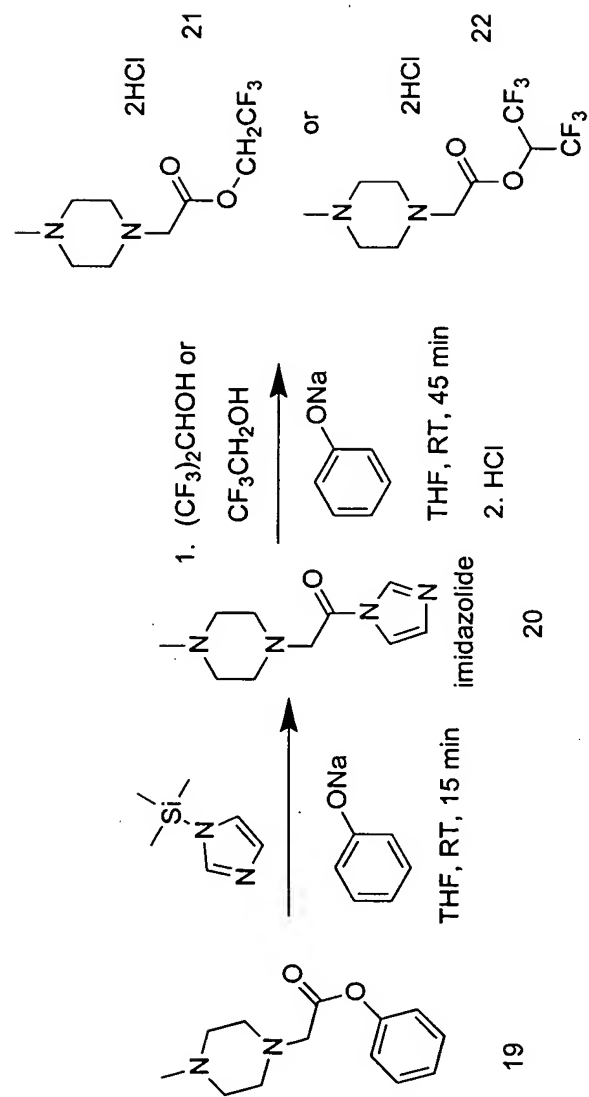
15.

acids



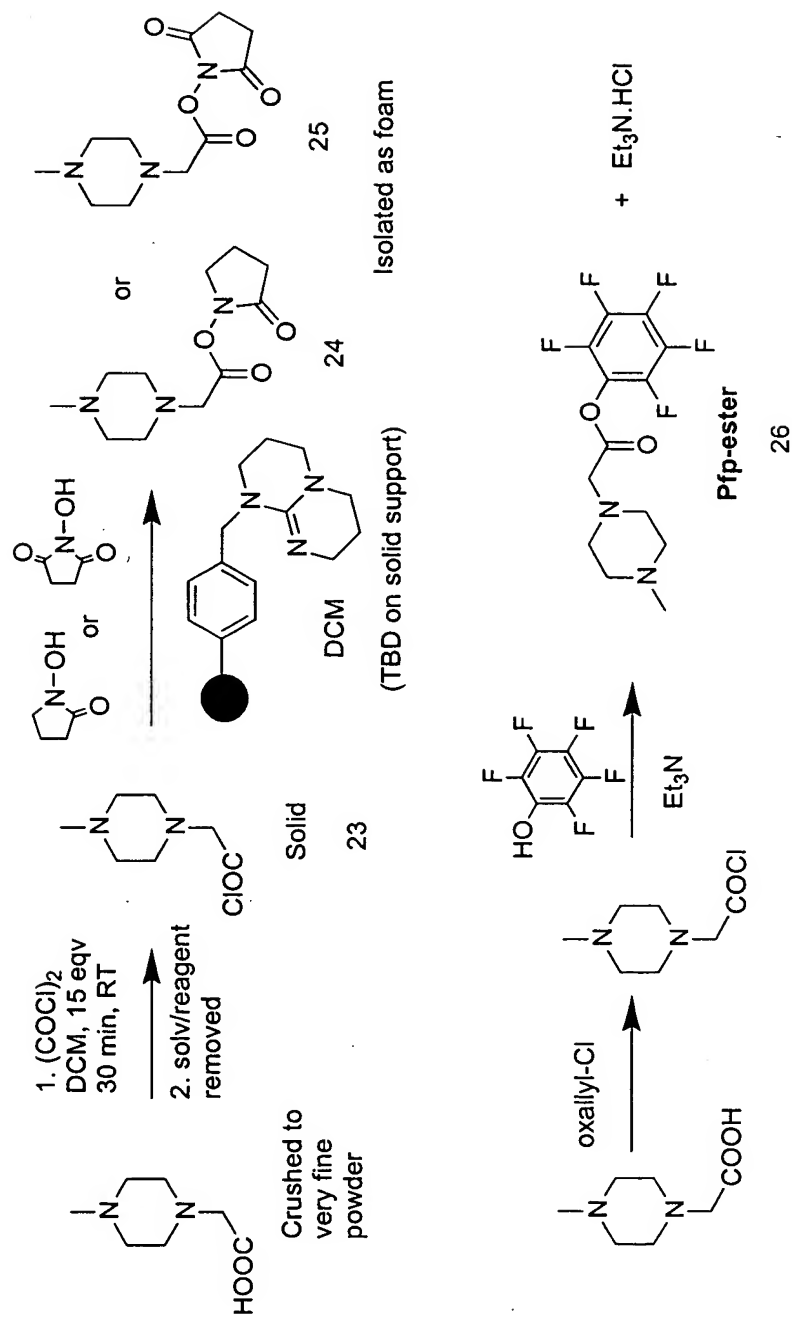
**Figure 4A**

Scheme A For The Synthesis Of Various Active Esters Of N-Methyl Piperazine  
Via Imidazolid Formation



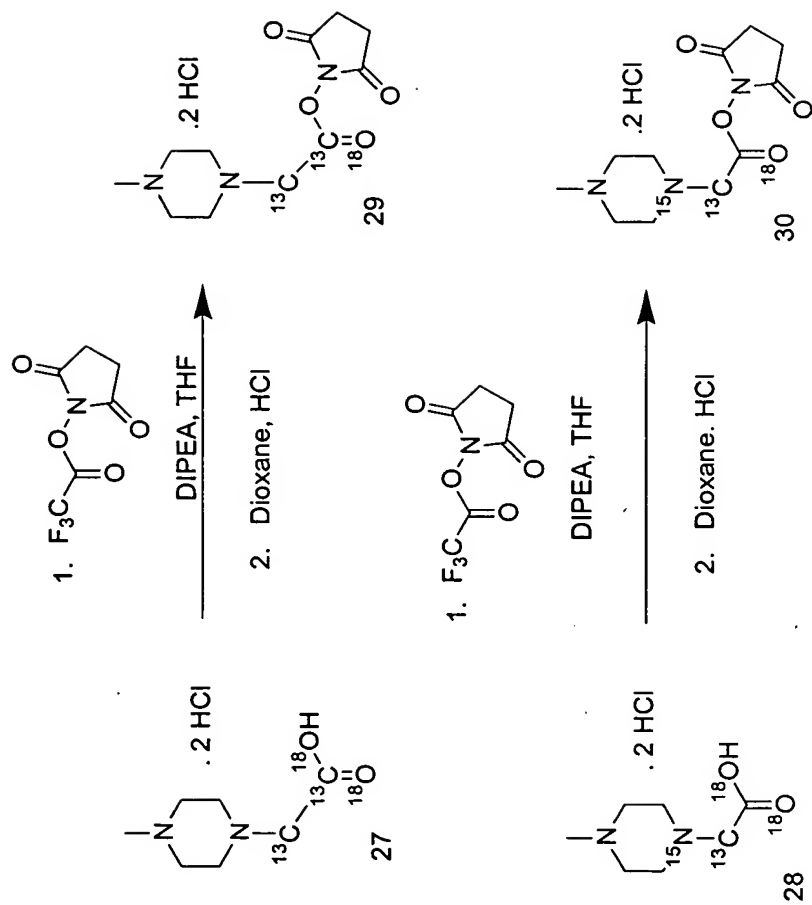
**Figure 4B**

Scheme B For The Synthesis Of Various Active Esters Of N-Methyl Piperazine  
Via Oxallyl Chloride



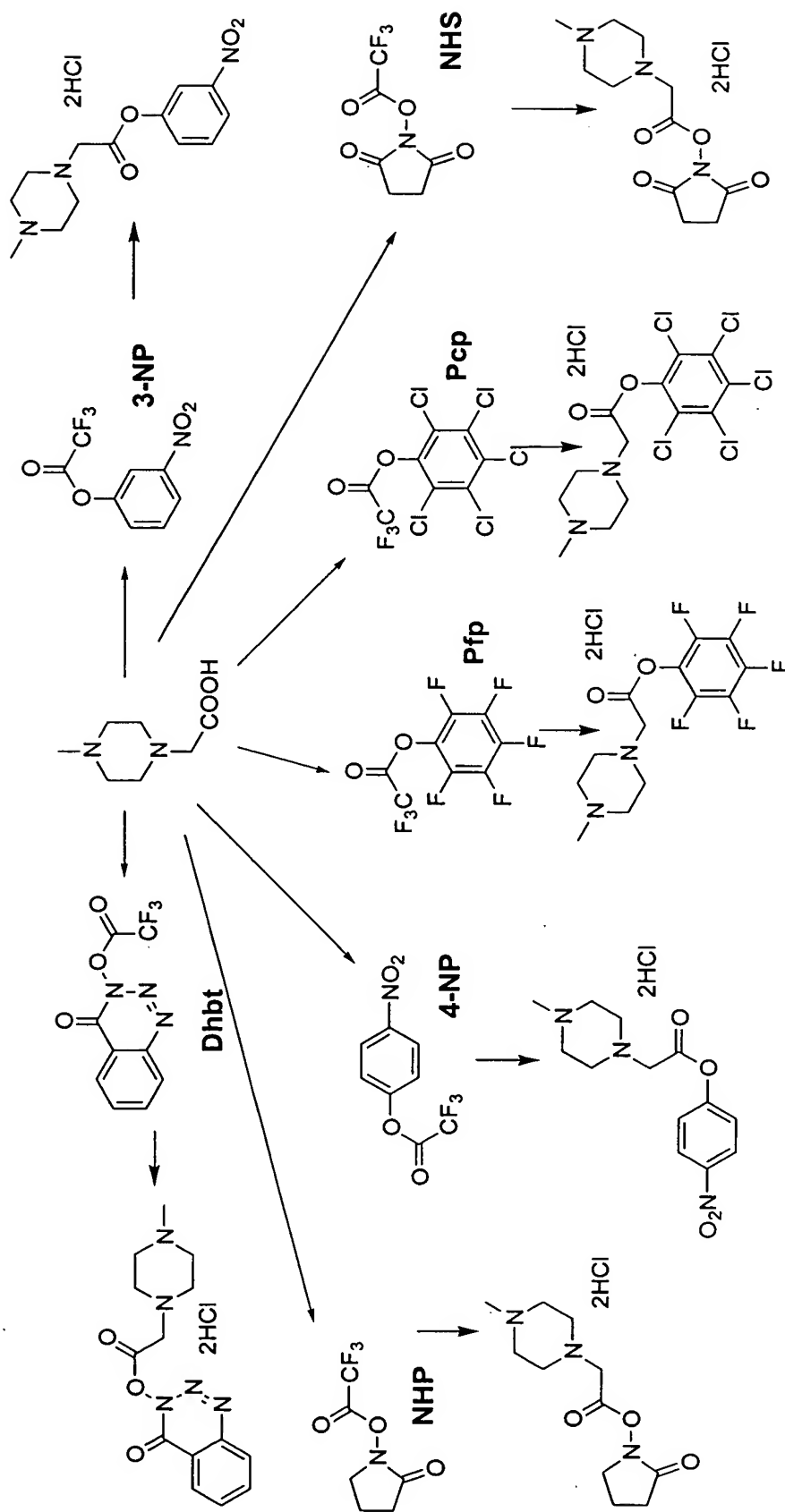
**Figure 4C**

Scheme C For The Synthesis Of Various Active Esters Of N-Methyl Piperazine  
Via Trifluoroacetate Ester



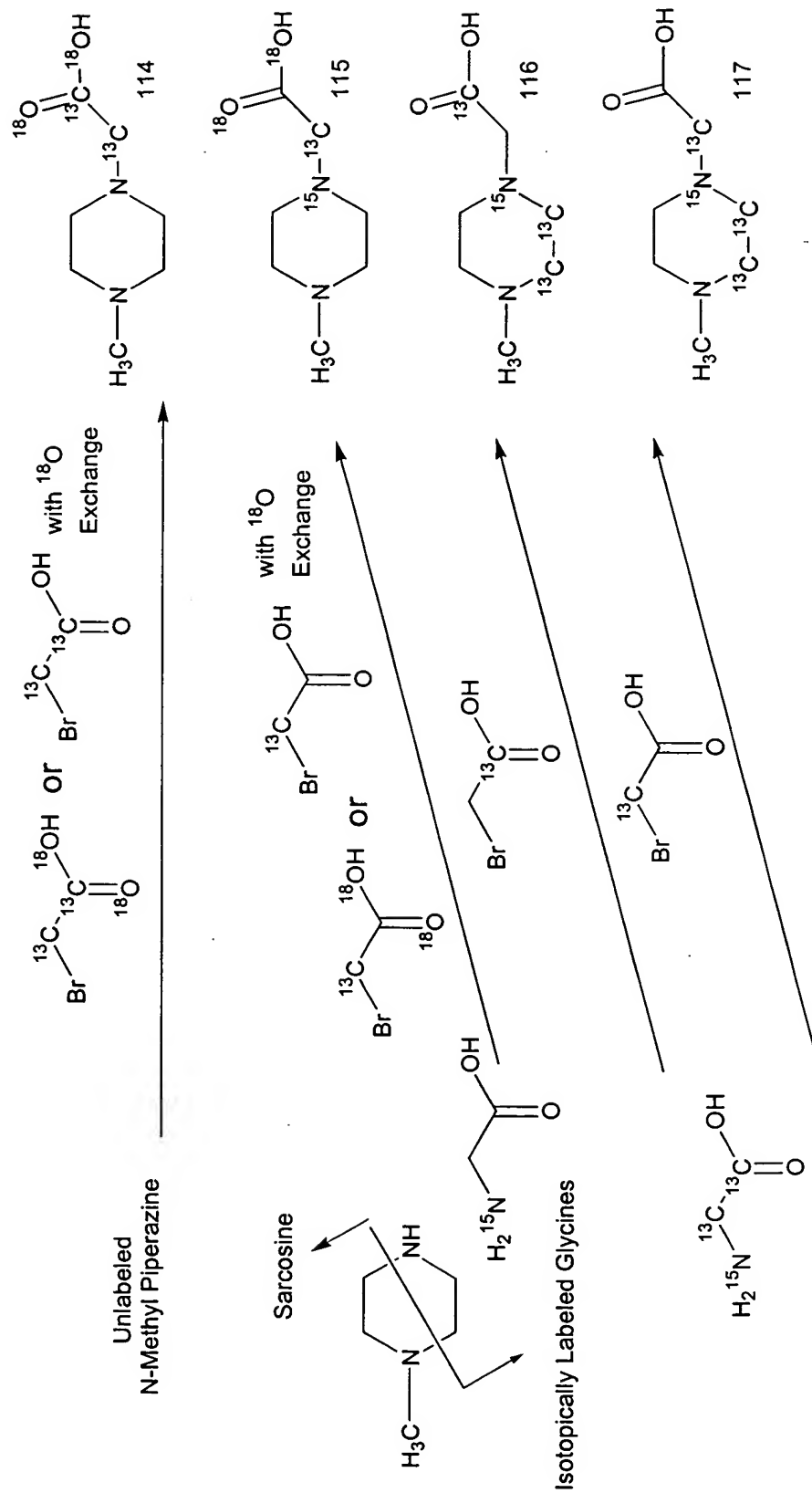
**Figure 4D**

Scheme For The Synthesis Of Various Active Esters Of N-Methyl Piperazine  
Via Trifluoroacetate Esters



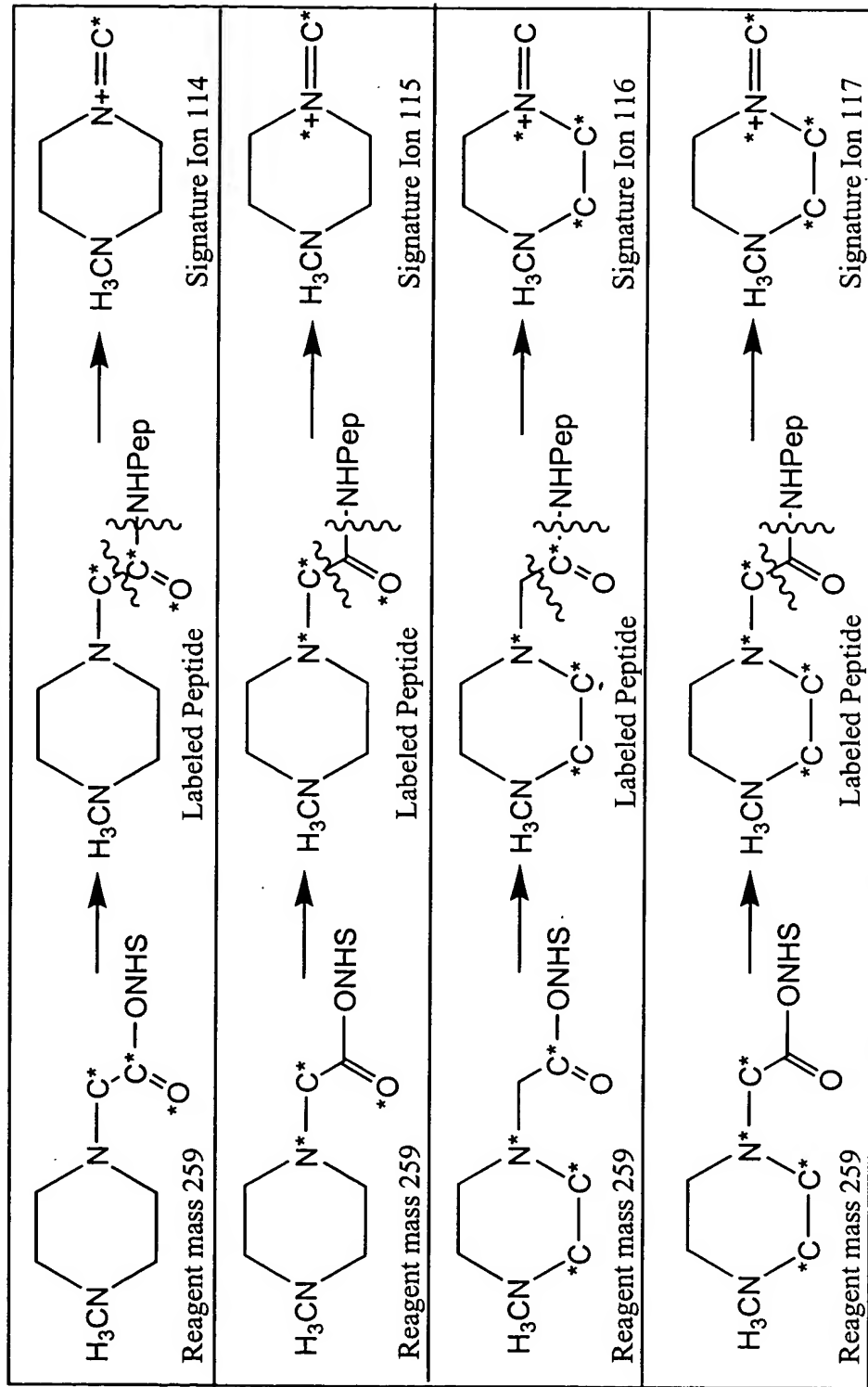
**Figure 5A**

Isotopic Pathway For Prepared N-Methyl Piperazine Acetic Acids



**Figure 5B**

Fragmentation of the Isobaric Label Set



NHS = N-hydroxysuccinimide

Pep = peptide

{} = Fragmentation Point

Stars indicate "heavy" isotopes  
 $N^* = {}^{15}\text{N}$ ;  $C^* = {}^{13}\text{C}$ ;  $O^* = {}^{18}\text{O}$